

FIU Medina Aquarius Program



1
00:00:06,070 --> 00:00:04,150
while the expedition 40 station crew

2
00:00:07,670 --> 00:00:06,080
continues its work above earth another

3
00:00:10,230 --> 00:00:07,680
crew of astronauts are taking space

4
00:00:12,709 --> 00:00:10,240
exploration 62 feet below the sea the

5
00:00:15,430 --> 00:00:12,719
nemo 18 crew japanese astronaut aki

6
00:00:18,550 --> 00:00:15,440
hoshide serving as nemo 18 commander and

7
00:00:20,790 --> 00:00:18,560
his crew nasa astronauts mark vandihei

8
00:00:23,910 --> 00:00:20,800
and jeannette epps and european space

9
00:00:26,070 --> 00:00:23,920
agency astronaut thomas pisquat are now

10
00:00:27,750 --> 00:00:26,080
submerged underwater for day five of its

11
00:00:30,550 --> 00:00:27,760
nine-day underwater mission at the

12
00:00:32,229 --> 00:00:30,560
aquarius habitat earlier today i spoke

13
00:00:33,590 --> 00:00:32,239

with mark vande high about the progress

14

00:00:35,430 --> 00:00:33,600

of his mission

15

00:00:37,590 --> 00:00:35,440

so i know you're on day five of a

16

00:00:39,750 --> 00:00:37,600

nine-day mission there underwater

17

00:00:43,270 --> 00:00:39,760

uh tell me how it's going it is going

18

00:00:44,470 --> 00:00:43,280

great we are having lots and lots of fun

19

00:00:45,990 --> 00:00:44,480

um

20

00:00:47,510 --> 00:00:46,000

it's an incredible opportunity to live

21

00:00:48,869 --> 00:00:47,520

down here and just

22

00:00:50,389 --> 00:00:48,879

seeing this the planet from this

23

00:00:52,310 --> 00:00:50,399

perspective and working with some

24

00:00:53,590 --> 00:00:52,320

amazing people is i just couldn't ask

25

00:00:56,069 --> 00:00:53,600

for anything better

26

00:00:58,709 --> 00:00:56,079

great well tell me from your personal

27

00:01:00,709 --> 00:00:58,719

perspective how do you feel that that

28

00:01:03,670 --> 00:01:00,719

nine-day underwater mission is preparing

29

00:01:06,230 --> 00:01:03,680

you to eventually go into space

30

00:01:09,590 --> 00:01:06,240

actually i think i'm shocked at how well

31

00:01:10,710 --> 00:01:09,600

it it is an analog to a space flight

32

00:01:14,310 --> 00:01:10,720

there is

33

00:01:15,270 --> 00:01:14,320

we're living in a small uh habitat

34

00:01:17,670 --> 00:01:15,280

where

35

00:01:19,030 --> 00:01:17,680

the outside atmosphere is not something

36

00:01:21,830 --> 00:01:19,040

we can breathe

37

00:01:23,109 --> 00:01:21,840

there's uh pressure differences

38

00:01:24,950 --> 00:01:23,119

between how

39

00:01:27,910 --> 00:01:24,960

outside and how we're

40

00:01:30,149 --> 00:01:27,920

normally used to living

41

00:01:32,149 --> 00:01:30,159

and the timeline actually has been great

42

00:01:35,670 --> 00:01:32,159

for me i'm getting a lot of exposure to

43

00:01:38,630 --> 00:01:35,680

trying to keep ahead of the timeline and

44

00:01:41,109 --> 00:01:38,640

adjust the changes in the plan so it's

45

00:01:42,950 --> 00:01:41,119

it's really good for me that's great you

46

00:01:45,670 --> 00:01:42,960

mentioned the timeline i guess that's

47

00:01:47,429 --> 00:01:45,680

very good training for you know how the

48

00:01:49,429 --> 00:01:47,439

astronauts aboard the space station are

49

00:01:50,950 --> 00:01:49,439

uh working along that timeline i've

50

00:01:52,789 --> 00:01:50,960

heard many times them kind of almost

51
00:01:54,310 --> 00:01:52,799
chasing that red line so is it similar

52
00:01:56,789 --> 00:01:54,320
there

53
00:01:59,270 --> 00:01:56,799
absolutely yes it's uh

54
00:02:00,630 --> 00:01:59,280
it's a lot more it's a much funner day

55
00:02:02,069 --> 00:02:00,640
when you're managing to always stay

56
00:02:04,149 --> 00:02:02,079
ahead of the timeline as opposed to

57
00:02:06,230 --> 00:02:04,159
those times when things go wrong

58
00:02:08,070 --> 00:02:06,240
and you have to call down and say hey i

59
00:02:11,029 --> 00:02:08,080
didn't get this done in time or i'm

60
00:02:12,710 --> 00:02:11,039
missing the part to finish this

61
00:02:14,949 --> 00:02:12,720
so it

62
00:02:17,270 --> 00:02:14,959
is challenging sometimes but as time

63
00:02:18,070 --> 00:02:17,280

goes on things get easier and easier to

64

00:02:20,550 --> 00:02:18,080

do

65

00:02:23,990 --> 00:02:20,560

and it just gets more and more fun just

66

00:02:26,229 --> 00:02:24,000

keep swimming so listen

67

00:02:30,309 --> 00:02:26,239

so listen i know uh yesterday i believe

68

00:02:32,309 --> 00:02:30,319

you were out for a simulated spacewalk

69

00:02:34,390 --> 00:02:32,319

is that correct that's correct so tell

70

00:02:37,190 --> 00:02:34,400

me about that

71

00:02:38,869 --> 00:02:37,200

so tomate and i were out on a spacewalk

72

00:02:40,150 --> 00:02:38,879

for about three hours actually of course

73

00:02:42,070 --> 00:02:40,160

we're in the water

74

00:02:45,270 --> 00:02:42,080

um we're simulating approaching an

75

00:02:48,550 --> 00:02:45,280

asteroid where we had already mounted a

76
00:02:50,150 --> 00:02:48,560
a boom with a drill assembly and we were

77
00:02:51,910 --> 00:02:50,160
working through the engineering

78
00:02:53,750 --> 00:02:51,920
challenges associated with the equipment

79
00:02:56,390 --> 00:02:53,760
development for

80
00:02:58,309 --> 00:02:56,400
one of those drills so

81
00:02:59,910 --> 00:02:58,319
we set up the drill we started doing

82
00:03:01,990 --> 00:02:59,920
some sampling

83
00:03:03,910 --> 00:03:02,000
and gave the engineers designing the

84
00:03:05,589 --> 00:03:03,920
equipment some feedback on what we

85
00:03:08,229 --> 00:03:05,599
thought worked well and

86
00:03:10,390 --> 00:03:08,239
how we can operate it better yeah well

87
00:03:11,750 --> 00:03:10,400
so tell me how did that compare to your

88
00:03:13,830 --> 00:03:11,760

training when you're out here at the

89

00:03:16,070 --> 00:03:13,840

neutral buoyancy laboratory was it was

90

00:03:18,630 --> 00:03:16,080

there anything different any extra

91

00:03:21,430 --> 00:03:18,640

challenges that would be different

92

00:03:22,949 --> 00:03:21,440

in some ways it was easier um

93

00:03:24,949 --> 00:03:22,959

in the neutral buoyancy lab you're

94

00:03:26,790 --> 00:03:24,959

inside of a pressurized suit that's four

95

00:03:28,630 --> 00:03:26,800

pounds per square inch higher inside the

96

00:03:31,270 --> 00:03:28,640

suit than outside the suit

97

00:03:33,830 --> 00:03:31,280

here with a diving helmet on and wearing

98

00:03:35,190 --> 00:03:33,840

a wetsuit it was actually much easier to

99

00:03:37,030 --> 00:03:35,200

move around because there was no

100

00:03:39,190 --> 00:03:37,040

pressure differential between the

101
00:03:41,750 --> 00:03:39,200
outside and inside the wetsuit

102
00:03:42,710 --> 00:03:41,760
also the gloves were using uh

103
00:03:44,630 --> 00:03:42,720
here

104
00:03:46,470 --> 00:03:44,640
they're normal diving gloves so they're

105
00:03:48,630 --> 00:03:46,480
much it's much easier to manipulate your

106
00:03:50,630 --> 00:03:48,640
fingers

107
00:03:53,030 --> 00:03:50,640
you can also adjust your buoyancy

108
00:03:54,470 --> 00:03:53,040
yourself much like when you're diving

109
00:03:55,990 --> 00:03:54,480
so

110
00:03:58,470 --> 00:03:56,000
in general it was easier it wasn't as

111
00:04:00,470 --> 00:03:58,480
high a resolution simulation

112
00:04:01,589 --> 00:04:00,480
the visibility here yesterday was much

113
00:04:04,309 --> 00:04:01,599

worse

114

00:04:07,110 --> 00:04:04,319

um but we had diver support um just like

115

00:04:08,070 --> 00:04:07,120

we do in the mbl and the equipment was

116

00:04:13,110 --> 00:04:08,080

similar

117

00:04:14,390 --> 00:04:13,120

and so was it about the was it simulated

118

00:04:16,629 --> 00:04:14,400

much like a space

119

00:04:17,909 --> 00:04:16,639

walk as far as time wise

120

00:04:20,469 --> 00:04:17,919

um

121

00:04:24,310 --> 00:04:20,479

yes very much so although in the nbl

122

00:04:26,230 --> 00:04:24,320

we'd spend five to six hours underwater

123

00:04:28,790 --> 00:04:26,240

we were only outside for about three

124

00:04:31,510 --> 00:04:28,800

hours okay and tell me some about the

125

00:04:33,510 --> 00:04:31,520

tools that you were using

126

00:04:36,230 --> 00:04:33,520

so there's a large uh

127

00:04:38,550 --> 00:04:36,240

room that starts off folding up

128

00:04:41,430 --> 00:04:38,560

it uh you basically raise up one part

129

00:04:43,749 --> 00:04:41,440

you have another elbow sticking out

130

00:04:47,270 --> 00:04:43,759

and then you mount a drill

131

00:04:49,830 --> 00:04:47,280

on the other end um in an attempt to

132

00:04:51,030 --> 00:04:49,840

get about a two meter long sample from

133

00:04:53,030 --> 00:04:51,040

the asteroid

134

00:04:54,469 --> 00:04:53,040

we've got we drill in

135

00:04:56,629 --> 00:04:54,479

one section

136

00:04:58,870 --> 00:04:56,639

once that's gone down far enough we add

137

00:05:00,629 --> 00:04:58,880

another section continue drilling

138

00:05:02,469 --> 00:05:00,639

and then if all goes well and the drill

139

00:05:04,550 --> 00:05:02,479

doesn't stop we add a third section and

140

00:05:06,469 --> 00:05:04,560

continue drilling

141

00:05:08,150 --> 00:05:06,479

once that's all done you pull it out and

142

00:05:10,629 --> 00:05:08,160

you've got a core sample down the length

143

00:05:12,790 --> 00:05:10,639

of that hollow drill bit

144

00:05:14,629 --> 00:05:12,800

i understand you guys are also doing

145

00:05:17,189 --> 00:05:14,639

some other things working with calm

146

00:05:18,230 --> 00:05:17,199

delays and also some human body studies

147

00:05:20,150 --> 00:05:18,240

can you tell me some of the other

148

00:05:22,070 --> 00:05:20,160

activities that you've been involved in

149

00:05:24,390 --> 00:05:22,080

yeah we've been doing a lot of studies

150

00:05:26,310 --> 00:05:24,400

on teamwork this is a very confined

151
00:05:28,230 --> 00:05:26,320
space much like we would be in if we're

152
00:05:33,350 --> 00:05:28,240
traveling further away

153
00:05:37,510 --> 00:05:36,070
check our proximity to each other

154
00:05:39,990 --> 00:05:37,520
we've got sensors that check our heart

155
00:05:42,230 --> 00:05:40,000
rate light exposure our activity levels

156
00:05:45,670 --> 00:05:42,240
um even we've been doing uh saliva

157
00:05:47,990 --> 00:05:45,680
samples to help understand what hormones

158
00:05:50,310 --> 00:05:48,000
we've got going on in our bodies just

159
00:05:52,390 --> 00:05:50,320
to better understand the relationships

160
00:05:53,670 --> 00:05:52,400
uh among ourselves also lots and lots of

161
00:05:55,029 --> 00:05:53,680
surveys

162
00:05:57,990 --> 00:05:55,039
um

163
00:06:01,110 --> 00:05:58,000

any more details on that question

164

00:06:02,550 --> 00:06:01,120

um yeah so and then also you're talking

165

00:06:04,309 --> 00:06:02,560

about the teamwork and stuff i guess you

166

00:06:06,870 --> 00:06:04,319

also have a similar you have an

167

00:06:09,510 --> 00:06:06,880

international crew there with aki

168

00:06:12,070 --> 00:06:09,520

hoshide and also thomas pesquet from the

169

00:06:14,230 --> 00:06:12,080

european space agency much like what you

170

00:06:16,950 --> 00:06:14,240

would have on the space station possibly

171

00:06:18,230 --> 00:06:16,960

even future missions so how is that

172

00:06:20,150 --> 00:06:18,240

going for you

173

00:06:23,029 --> 00:06:20,160

i i honestly it couldn't be going better

174

00:06:24,309 --> 00:06:23,039

um we have been having so much fun a lot

175

00:06:25,749 --> 00:06:24,319

of times we're laughing so hard we have

176

00:06:28,950 --> 00:06:25,759

a hard time breathing

177

00:06:31,590 --> 00:06:28,960

uh aki is an incredibly good commander

178

00:06:33,430 --> 00:06:31,600

uh he's got a great sense of when to

179

00:06:35,350 --> 00:06:33,440

make things very directive and say okay

180

00:06:37,110 --> 00:06:35,360

let's focus on this get it done

181

00:06:38,629 --> 00:06:37,120

at the same time he's got a very goofy

182

00:06:43,510 --> 00:06:38,639

side where he's willing to laugh at

183

00:06:45,430 --> 00:06:43,520

himself and uh and you know we're just

184

00:06:46,870 --> 00:06:45,440

yeah it's we're and that's not always

185

00:06:48,950 --> 00:06:46,880

the case but somehow things are meshing

186

00:06:51,590 --> 00:06:48,960

very well for us here

187

00:06:54,070 --> 00:06:51,600

sure so listen i've been following your

188

00:06:55,749 --> 00:06:54,080

mission along on twitter and i've

189

00:06:57,110 --> 00:06:55,759

noticed that you had posted something

190

00:06:58,950 --> 00:06:57,120

recently about taking a shower and

191

00:07:00,469 --> 00:06:58,960

looking out the window and seeing fish

192

00:07:02,390 --> 00:07:00,479

can you imagine what you might see when

193

00:07:04,309 --> 00:07:02,400

you're in space

194

00:07:07,189 --> 00:07:04,319

hopefully i wouldn't see any life

195

00:07:08,390 --> 00:07:07,199

outside the window unless i was hoping

196

00:07:09,830 --> 00:07:08,400

unless that's something we were looking

197

00:07:12,070 --> 00:07:09,840

for but uh

198

00:07:14,230 --> 00:07:12,080

yeah in fact you can see this is uh

199

00:07:15,350 --> 00:07:14,240

today we've got a lot more fish outside

200

00:07:17,270 --> 00:07:15,360

than normal

201
00:07:19,189 --> 00:07:17,280
um

202
00:07:21,110 --> 00:07:19,199
it's like a swarm of mosquitoes honestly

203
00:07:22,870 --> 00:07:21,120
there's so much light outside the window

204
00:07:24,469 --> 00:07:22,880
right now it's really amazing yeah we've

205
00:07:26,070 --> 00:07:24,479
no i've noticed a lot of the the

206
00:07:28,309 --> 00:07:26,080
photographs there seems to always be a

207
00:07:31,510 --> 00:07:28,319
fish outside the window and uh what's

208
00:07:33,270 --> 00:07:31,520
next on tap for you

209
00:07:35,029 --> 00:07:33,280
i'll come back to

210
00:07:37,510 --> 00:07:35,039
houston and

211
00:07:39,270 --> 00:07:37,520
the next big event for me is uh getting

212
00:07:42,150 --> 00:07:39,280
back in the nbl

213
00:07:45,189 --> 00:07:42,160

and then immediately following that uh

214

00:07:46,550 --> 00:07:45,199

orbit two orbitals the orbital

215

00:07:47,830 --> 00:07:46,560

spacecraft that's currently docked to

216

00:07:49,670 --> 00:07:47,840

the space station

217

00:07:51,270 --> 00:07:49,680

is going to undock so i'll work as a

218

00:07:53,589 --> 00:07:51,280

capcom for that mission

219

00:07:55,350 --> 00:07:53,599

wonderful well mark it was very uh good

220

00:07:57,430 --> 00:07:55,360

talking with you today thanks for

221

00:07:58,629 --> 00:07:57,440

joining us and uh best of luck to you

222

00:07:59,990 --> 00:07:58,639

and the crew for the rest of this

223

00:08:01,350 --> 00:08:00,000

mission